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## ENHANCING IMMUNE RESPONSES TO GENETIC IMMUNIZATION

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This application claims the benefit of co-pending provisional application Serial No. 60/082,600 filed April 22, 1998, which is incorporated by reference herein.

### TECHNICAL AREA OF THE INVENTION

The invention relates to the area of immune responses to genetic immunization. More particularly, the invention relates to enhancing immune responses to DNA immunogens using immune co-stimulatory molecules.

### BACKGROUND OF THE INVENTION

15 The use of genetic immunization, or immunization with DNA encoding polypeptide immunogens, to prime immune responses is viewed as a promising vaccine strategy. This technology offers potential improvements compared to other types of vaccines, such as subunit proteins complexed with adjuvants or inactivated or attenuated viral preparations. In addition to the practical advantages of simplicity of construction and modification, injection of genetic material encoding for polypeptide immunogens results in synthesis of the immunogens in the host. Thus, these immunogens are presented to the host immune system with native post-translational modifications, structure, and conformation.

20 In mice, several DNA vaccines have been effective at inducing long-lived antibody and cytotoxic T lymphocyte (CTL) responses and have conferred protective immunity against a number of viruses, bacteria, parasites, and tumors (1-8). Various